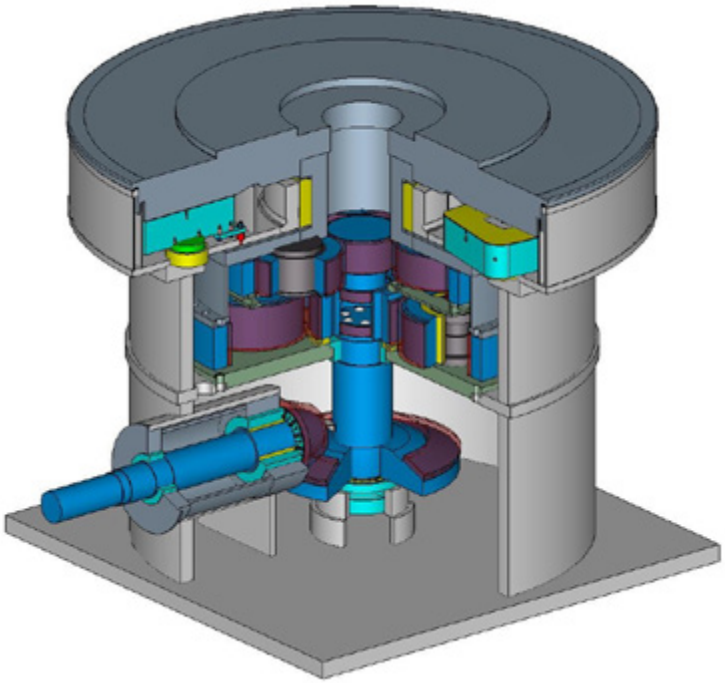
MAAG® WPV GEAR UNIT

Big results from a compact three-stage gear unit

Impressively compact, extremely robust

A unique drive system for vertical roller mills, our MAAG® WPV is a three-stage, bevel-planetary gear unit that reliably drives your mill. This robust gear unit uses torque split to give you highest power output in a compact design with straightforward servicing.



Key benefits

01 Highest power density with cost-efficient investment

02 Long service life and high operational reliability

03 Smart design and modern manufacturing deliver cost-efficient results

04 Simplified maintenance

Introduction

Modern vertical roller mills in the cement industry require gear units that are up to the challenge of handling higher performance densities and capable of transferring more torque. Current cement producers are also seeking optimum grinding table speeds, which determines the output drive speed of the gear unit. Increasing total gear ratios are the consequences of slower table rotation at the same gear unit input speed. Our MAAG® WPV with its masterful three-stage gear arrangement achieves all these aims – without compromising on reliability or ease of maintenance.

Design

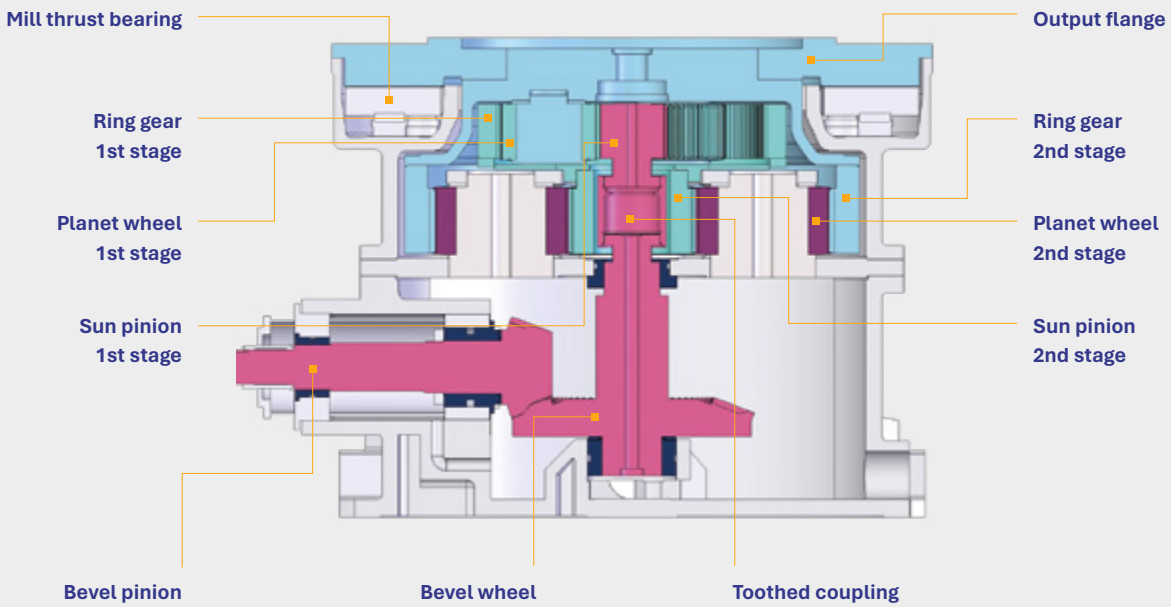
Unlike conventional two-stage gear units that require larger bevel wheel dimensions to increase power output, our MAAG WPV uses two planetary stages to move gear ratio from the bevel to the planetary.

The unique double-planetary gear with torque split in the MAAG WPV gear unit allows the unparalleled performance range upwards of 8,000 kW.

The first gear stage passes about 25% of the torque directly to the output flange and remaining 75% pass through the second stage. The four planets in the second stage need therefore smaller gear wheels than typical gearboxes with two planetary stages in serial arrangement. This design allows highest power density compared to the mill table diameter.

The hydrostatic thrust bearing arranged around the first planetary stage supports the mill table and absorbs static and dynamic loads from the grinding process. Each tilting pad of the thrust bearing is lined with Babbitt metal at the contact surface and lubricated singularly with high- and low-pressurized lube oil. Bevel and the planetary gears are also equipped with slide bearings. Thanks to their higher damping capability do these bearings not only provide unlimited lifespan, but also deliver smoother operation increasing the overall availability of your vertical roller mill.

Unique design for economical and reliable operation



All-around performance and ease from our WPV Gear Unit

With unlimited lifetime slide bearings, accessible bevel gear and the dual-chamber lubrication system, our MAAG® WPV gear unit makes servicing simple – and costs you less to keep in good order.

Dependably uncomplicated

Despite the varying requirements of different mills and applications, the parts used in our MAAG® WPV have a high degree of standardisation This consistency makes it an optimum gear unit solution for operating safety and reliability in the cement industry.

Our MAAG® WPV gear unit is available as standard solution or can be customised to suit your unique operational needs. The combination of the MAAG® WPV's high-grade bevel gear, innovative double-planetary gear and our unparalleled online condition monitoring lets you rely on common drive technology – even in highest-power applications. With the MAAG® WPV, you can implement new drive solutions without the need for complex control systems.

Simplified maintenance with high reliability

Large manholes in the lower casing part provide direct access to the bevel gear, letting the MAAG® WPV gear unit remain in place under the mill during inspections and services, reducing so any related downtime. Our MAAG® WPV gear unit also simplifies maintenance by allowing you to easily adjust the tooth contact and quickly removing or adjusting the bevel pinion from outside of the gear unit.

The three-stage gear arrangement of the MAAG® WPV and the thrust bearing for the grinding table give you dependable output and limited downtime. The internal emergency shoulders within the gear unit, limit the tilting of the mill table and guarantee a longer service life for gears and bearings.

Well-thought-out gear unit smoothly drives your mill

Through carefully considering the power ranges and table diameters of various vertical roller mills, the design of our standardised MAAG® WPV fits to every process and under every mill.

Lube oil supply unit keeps your gear running

The lube oil supply for our vertical roller mill gear units and drive systems include two circuits. Low-pressure pumps to feed bearings and gears with filtered and cooled lubrication oil from the main tank. High-pressure pumps supply lube oil for the thrust bearing from a separated compartment of the main tank filled with filtered and cooled oil. Using only clean oil on the high-pressure side allows us to improve the lifespan of the pumps.

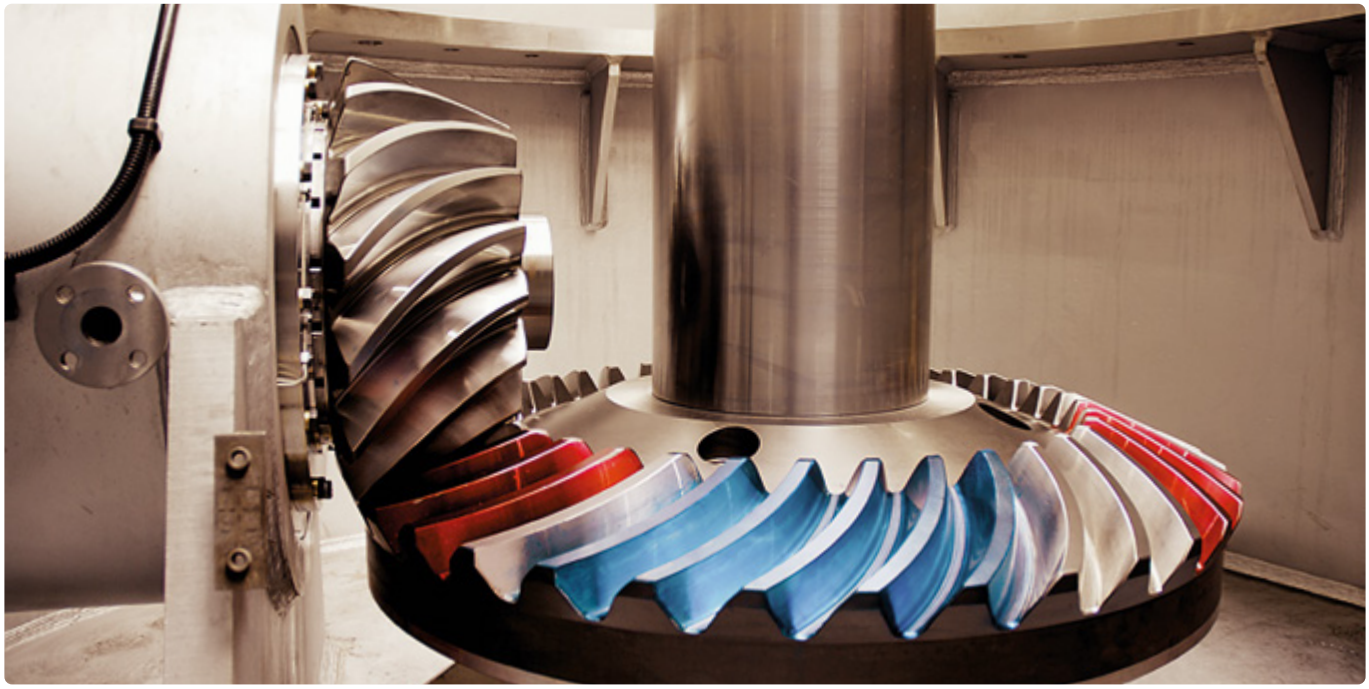
Beyond a basic condition monitoring system with MAAG® Predicta

Our condition monitoring system Predicta does much more than triggering inadmissible operating conditions.
It lets you set up condition-based preventive maintenance that uses continuous monitoring and data analysis to detect wear and tear at an early stage. With this enhanced information, we help you plan maintenance and servicing in advance – reducing downtime and keeping your plant running smoothly.

Auxiliary drive for maintenance purposes

A maintenance or auxiliary drive that is tailored to your requirements rounds out the scope of supply for your MAAG® WPV gear unit.
The maintenance drive is placed between the motor and gear unit and allows you to rotate the mill table very slowly. This simplifies maintenance work at your vertical roller mill, including replacing lining plates or rebuilding surfaces through welding.

The auxiliary unit is mostly used to start the mill when the breakaway torque is too substantial to start the motor directly. The fluid coupling of the auxiliary unit guarantees smooth acceleration, and the overrunning clutch automatically disengages the auxiliary drive after the main motor starts.



Home of Precision Engineering

For more than 100 years, the MAAG® Gear brand has successfully lived up to its founding vision and values.

Evolving demands in heavy-duty industries are driving the need for more efficient, reliable, and sustainable gear technologies. At MAAG, we are dedicated to providing high-precision solutions that respond to this need and enhance the productivity, sustainability and reliability of our clients' operations in cement, mining, and beyond. With a rich history of innovation and a robust product portfolio, we stand as trusted partners, committed to our mission of driving progress through precision. Discover how MAAG can help you elevate your business.

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